

## CPT Atomic Clock(CT40)

### Description

The CT40 CPT atomic clock is a miniature atomic clock based on the Coherent Population Trapping (CPT) principle, which outputs an accurate and stable 10MHz standard frequency signal and 1PPS pulse signal.

The dimension of CT40 CPT atomic clock is compatible with SA.45s chip clock, and can work in time-frequency boards and modules. It has UART frequency calibration interface and external electrical tuning interface.

### Feature

- Compact Design
- Compatible with SA.45s
- Wide Range Working Temperature
- Anti-Vibration

### Application Filed

- Timing Board and Module
- Telecommunication System
- Power Grid
- Positioning System



## Technical Parameter

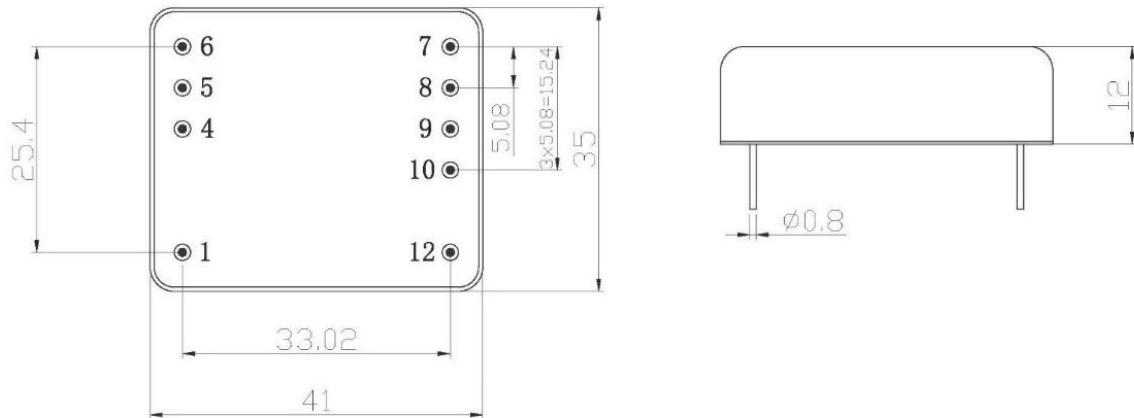
<b>Output Signal Feature</b>			
Serial	Item		Parameter
1	Output Frequency		10MHz
2	Wave Type		Square
3	Electrical Level		3.3V
4	Phase Noise (SSB)	10Hz	$\leq -90\text{dBc/Hz}$
		100Hz	$\leq -120\text{dBc/Hz}$
		1kHz	$\leq -140\text{dBc/Hz}$
		10kHz	$\leq -145\text{dBc/Hz}$
<b>Output 1PPS feature</b>			
Serial	Item		Parameter
1	Amplitude		$3.3\text{V} \pm 0.2\text{V}$
2	Pulse Width		$> 1 \mu\text{s}$
3	Rising Time		$< 10 \text{ ns}$
<b>Frequency Feature</b>			
Serial	Item		Parameter
1	Relative Error		$\leq \pm 5.0\text{E-}11$
2	Frequency Stability (Allan)	$\delta y(1\text{s})$	$\leq 1.0\text{E-}10$
		$\delta y(10\text{s})$	$\leq 3.0\text{E-}11$
		$\delta y(100\text{s})$	$\leq 1.0\text{E-}11$
3	Drift (Power-on 1d)		$\leq 1.0\text{E-}11/\text{d}$
4	Temperature Feature( $-55^{\circ}\text{C} \sim +80^{\circ}\text{C}$ )		$\leq 1.0\text{E-}9$
5	Power-on Feature	Lock Time	$\leq 5\text{min}$
6	Frequency Adjustment	Range	$\geq \pm 2\text{E-}8$
		Ratio	$\leq 1\text{E-}12$
7	Frequency Error (Tamed 2h)		$\leq \pm 1.0\text{E-}12/\text{d}$

## Technical Parameter

<b>Sync and Holdover Performance</b>			
Serial	Item	Parameter	
1	1PPS Sync Error	$\leq 50\text{ns}$	
2	Holdover (1d @ Tamed 1d)	$\leq 3\mu\text{s}$	
<b>Power and Consumption</b>			
Serial	Item	Parameter	
1	Voltage	+3.2Vdc~+3.4Vdc	
2	Start Consumption	$\leq 5\text{W}$	
3	Rated Consumption (Normal Temperature)	$\leq 2\text{W}$	
<b>Status Indicator</b>			
Serial	Item	Parameter	
1	Status	Lock	0V~0.4V
		Unlock	2.2V~3.4V
<b>Physical Parameter</b>			
Serial	Item	Parameter	
1	Weight	$\leq 50\text{g}$	
<b>Environment Feature</b>			
Serial	Item	Parameter	
1	Working Temperature	$-55^{\circ}\text{C}\sim+80^{\circ}\text{C}$	
2	Storage Temperature	$-55^{\circ}\text{C}\sim+85^{\circ}\text{C}$	
3	Dynamic Environment	Suitable for dynamic application	
4	Magnetism	$\leq 2\text{ Gauss}$	
<b>Reliability</b>			
Serial	Item	Parameter	
1	MTBF	$\geq 100000\text{h}$	

## Dimension

$(41 \pm 0.5)$  mm  $\times$   $(35 \pm 0.5)$  mm  $\times$   $(12 \pm 0.5)$  mm.



## Pin Definition

Serial	Function	Description
1	EFC	External Port for adjustment
4	Lock Indicator	3.3V, low=lock
5	TXD	UART TX (LvTTL)
6	RXD	UART RX (LvTTL)
7	+3.3V	Power Supply+
8	GND	Power Supply-
9	1PPS Input	Reference 1PPS input
10	1PPS Output	1PPS Ouput
12	10M Output	10M Output